AMENDMENTS TO THE CLAIMS

Please amend the claims as follows.

1. (Currently Amended) A [[P]]process for detection of gas bubbles in a liquid adapted to a device comprising: a light source [[(1)]], a light detector [[(2)]], wherein the light source and the light detector are immersed in the said liquid, and a data controlling and processing unit [[(6)]] linked to a client system [[(8)]] comprising:

    [[the]] steps of emitting light from the light source [[(1),]]

        for acquisition of [[the]] a first measurement and a subsequent measurement known as a successive measurement[[s]] of light intensity perceived by the light detector [[(2)]], and

        for calculation of a variation between two successive measurements of said light intensity.

2. (Currently Amended) The [[P]]process according to claim 1, characterised in that it further comprises comprising [[a]] comparison comparing step of the time the variation between the two successive measurements to [[at]] a predefined threshold value S.

3. (Currently Amended) The [[P]]process according to claim 2, characterised in that it further comprises comprising [[an]] incrementation incrementing step of an alarm a warning counter [[(13)]] by a predefined value A when the variation in light intensity perceived by the light detector [[(2)]] between two successive measurements is greater

than the threshold S and ~~decrementation~~ <u>decrementing</u> of said warning counter [[(13)]] by a predefined value B in the opposite case.

4. (Currently Amended) <u>The</u> [[P]]<u>p</u>rocess according to claim 3, ~~characterised in that it~~ further ~~comprises a step of~~ <u>comprising</u> sending to the client system [[(8)]] information indicating that a bubble content is greater than an authorised maximum content when said warning counter [[(13)]] exceeds a predefined <u>alarm</u> value C ~~known as the alarm value~~.

5. (Currently Amended) <u>The</u> [[P]]<u>p</u>rocess according to claim 3 ~~characterised in that it~~ further ~~comprises~~ <u>comprising</u> ~~a step consisting of~~ sending to the client system [[(8)]] information indicating that [[a]] <u>the</u> bubble content is greater than an authorised maximum content when said warning counter [[(13)]] exceeds a predefined <u>alarm</u> value C' ~~known as the alarm value~~ over a period greater than a predefined time delay period.

6. (Currently Amended) <u>The</u> [[P]]<u>p</u>rocess according to ~~any of~~ claim[[s]] 4 [[or 10]], ~~characterised in that it~~ further ~~comprises~~ <u>comprising</u> a ceasing step of sending to the client system [[(8)]] information indicating that the bubble content is greater than the authorised maximum content when the warning counter [[(13)]] is less than a predefined <u>final alarm</u> value D ~~known as the final alarm value~~.

7. (Currently Amended) <u>The</u> [[P]]<u>p</u>rocess according to claim 1, ~~characterised in that it~~ further <u>comprising calculating</u> ~~comprises a calculation step of~~ an average value from a plurality of variations between two successive measurements of light intensity.

8. (Currently Amended) The [[P]]process according to claim 7 ~~characterised in that it~~ further comprising ~~comprises a step of~~ sending to the client system [[(8)]] information indicating the average value of the successive variations of the light intensity perceived by the light detector [[(2)]].

9. (Currently Amended) The [[P]]process according to claim 1 ~~any of the above claims,~~ ~~characterised in that~~ wherein the data controlling and processing unit [[(6)]] comprising a control module of the light source [[(15)]] is capable of periodically polarising said light source [[(1)]] on several polarisation levels, ~~the light source (1) is polarised periodically~~ ~~by said control module[[(15)]] of the light source~~.

10. (Currently Amended) The [[P]]process according to claim 9, wherein ~~characterised in~~ ~~that a~~ calibration of ~~the sensor constituted by~~ the source [[(1)]] and the light detector [[(2)]] is carried out synchronously by [[on the]] periodic polarisation of the light source [[(1)]].

11. (Currently Amended) The [[P]]process according to claim 1, wherein ~~any of the above~~ ~~claims, characterised in that~~ the light source [[(1)]] and the light detector [[(2)]] are ~~being~~ arranged noticeably orthogonally, acquiring ~~the acquisition step of the~~ successive measurements of the ~~light~~ intensity of light ~~perceived by the light detector (2) makes it~~ ~~possible to acquire measurements of the quantity of light rays emitted by the light source~~ ~~(1) which are~~ reflected from ~~should the case arise in the presence of bubbles on~~ the

surface of a gas bubble in a direction noticeably orthogonal to the direction of incidence towards the light detector [[(2)]].

12. (Currently Amended) The [[P]]process according to any of claim[[s]] 1, wherein to 10, characterised in that, the source [[(1)]] and the light detector (2) are being arranged noticeably adjacently, acquiring the acquisition step of the successive measurements of the light intensity of light perceived by the light detector (2) makes it possible to acquire measurements of the quantity of light rays emitted by the light source (1) which are reflected from should the case arise in the presence of bubbles on the surface of a gas bubble in a direction noticeably parallel to the direction of incidence towards the light detector [[(2)]].

13. (Currently Amended) The [[P]]process according to any of claim[[s]] 11 [[or 12]], characterised in that, the device likewise further comprising a temperature measuring element and at least one switch linked to said temperature measuring element, wherein the switch is capable of changing state during the detection of a gas bubble.

14. (Currently Amended) The [[P]]process according to claim 13, wherein characterised in that, the data controlling and processing unit [[(6)]] transmitting, via an interface module (7), to the client system (8) information on the temperature of the liquid and the presence of gas bubbles in the liquid, the interface module (7) and the client system (8) being linked only by a single wire, a high-amplitude level signal proportional to the temperature of the liquid when the presence of a bubble is not detected or low level when the presence of a bubble is detected, via an interface module to the client system, wherein

the interface module and the client system are linked only by a single wire. ~~is sent to the~~ ~~client system (8) by the interface module (7).~~

15. (Currently Amended) The [[P]]process according to ~~any of~~ claim[[s]] 11 [[or 12]], ~~characterised in that, the device likewise~~ further comprising a system of electrodes capable of measuring the resistivity of the ambient conditions wherein, ~~and since the data~~ ~~controlling and processing unit (6) being linked to the client system (8) via an interface~~ ~~module (7),~~ the client system [[(8)]] is informed, via the interface module [[(7)]], by the data controlling and processing unit [[(6)]], that ~~the sensor constituted by~~ the source [[(1)]] and the light detector [[(2)]] are [[is]] not immersed in the liquid when the system of electrodes identifies the ambient conditions as not being the liquid.

16. (Currently Amended) The [[P]]process according to claim 15, ~~characterised in that, the~~ ~~device likewise~~ further comprising a temperature measuring element and at least one switch linked to said temperature measuring element, wherein the switch is capable of changing state during the detection of a gas bubble and during the absence of liquid.

17. (Currently Amended) The [[P]]process according to claim 16, wherein ~~characterised in~~ ~~that,~~ the data controlling and processing unit [[(6)]] transmitting, ~~via the interface module~~ ~~(7) , to the client system information on the temperature of the liquid, the presence of~~ ~~gas bubbles in the liquid and the nonimmersion of the sensor in the liquid, the interface~~ ~~module (7) and the client system (8) being linked only by a single wire,~~ a high-amplitude level signal proportional to the temperature of the liquid when the presence of a bubble is not detected and when the ~~sensor is~~ light source and the light detector are immersed in

the liquid or low level when the presence of a bubble is detected or when the ~~sensor is~~

light source and the light detector are not immersed in the liquid, via the interface module

to the client system wherein, the interface module and the client system are linked only

by a single wire. ~~is supplied to the client system (8) by the interface module (7).~~

18. (Currently Amended) The [[P]]process according to ~~any of~~ claim[[s]] 1, wherein ~~to 10,~~

~~characterised in that,~~ the source [[(1)]] and the light detector [[(2)]] are ~~being~~ arranged

noticeably opposite each other, making ~~the step of light emission makes~~ it possible to

send out a light of a specific wavelength from the light source [[(1)]] such that it is

strongly (reciprocally weakly) absorbed by the liquid and slightly (reciprocally strongly)

absorbed by the gas constituting the bubbles.

19. (Currently Amended) The [[P]]process according to ~~any of~~ claim[[s]] 1, wherein ~~to 10,~~

~~characterised in that,~~ the source [[(1)]] and the light detector [[(2)]] are ~~being~~ arranged

noticeably opposite each other, acquiring ~~the acquisition step of the~~ successive

measurements of light intensity ~~perceived by the light detector (2) makes it possible to~~

~~acquire measurements of the quantity of light rays emitted by the light source (1) which~~

~~are~~ deflected towards the light detector [[(2)]] should the case arise in the presence of

bubbles due to the diffraction index differences between the liquid and the gas

constituting the bubbles at the level of the surface of said bubbles.

20. (Currently Amended) The [[P]]process according to ~~any of~~ claim[[s]] 18 [[or 19]],

~~characterised in that, the device likewise~~ further comprising a temperature measuring

element and at least one switch linked to said temperature measuring element, <u>wherein</u> the switch is capable of changing state periodically.

21. (Currently Amended) <u>The</u> [[P]]process according to claim 20, <s>characterised in that,</s> the data controlling and processing unit [[(6)]] transmitting, via an interface module [[(7)]], to the client system, information on the temperature of the liquid and the presence of bubbles in the liquid, <u>wherein</u> the interface module [[(7)]] and the client system [[(8)]] are <s>being</s> linked only by a single wire, a periodic signal <s>is supplied to the client system (8) by the interface module (7)</s>.

22. (Currently Amended) <u>The</u> [[P]]process according to claim 21, <u>wherein</u> <s>characterised in that</s> the period of said periodic signal is formed by a first phase constituted by a constant high-amplitude level signal proportional to the temperature of the liquid and by a second phase constituted by a train of pulses of modulated width, <u>wherein</u> the width of the impulses <u>is</u> <s>being</s> modulated according to the average value of the successive variations in light intensity perceived by the light detector [[(2)]].

23. (Currently Amended) <u>The</u> [[P]]process according to <s>any of</s> claim[[s]] 18 [[or 19]], <u>wherein</u> <s>characterised in that</s> the client system [[(8)]] is informed, via an interface module [[(7)]], that the sensor is not immersed in liquid when the polarisation value of the light source [[(1)]] is lower than a predefined threshold value T, known as the polarisation alarm threshold value.

24. (Currently Amended) The [[P]]process according to claim 23, ~~characterised in that, the device likewise~~ further comprising a temperature measuring element and at least one switch linked to said temperature measuring element, wherein the switch is capable of changing state periodically.

25. (Currently Amended) The [[P]]process according to claim 24, wherein ~~characterised in that~~ the data controlling and processing unit [[(6)]] transmitting, via the interface module [[(7)]], to the client system the information on the temperature of the liquid, the presence of bubbles in the liquid and the non-immersion of the sensor in the liquid, wherein the interface module [[(7)]] and the client system [[(8)]] being linked only by a single wire, a periodic signal. ~~is supplied to the client system (8) by the interface module (7)~~.

26. (Currently Amended) The [[P]]process according to claim 25, wherein ~~characterised in that~~ the period of said periodic signal is formed from a first phase constituted by a constant high-amplitude level signal proportional to the temperature of the liquid and a second phase constituted by a train of pulses of modulated width, wherein the width of the impulses is ~~being~~ modulated according to the average value of the successive variations in light intensity perceived by the light detector [[(2)]] and said width being maximum when the sensor is not immersed in the liquid.

27. (Currently Amended) A [[D]]device [[of]] for detection of gas bubbles in a liquid comprising:

light emission means,

light detection means wherein the light emission means and the light detection means are immersed in the liquid, and

data controlling and processing means linked to the light detection means, characterised in that following emission of light by the light emission means and following the detection of light by the light detection means, the data controlling and processing means are capable of obtaining light detection means of a first measurement and a subsequent measurement known as a [[the]] successive measurement[[s]] of light intensity detected by the light detection means and of calculating a variation in light intensity between two successive measurements of light intensity.